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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/875,010	06/07/2001	Mahito Shimohara	35.C15623	9261

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EXAMINER

BROCK II, PAUL E

ART UNIT PAPER NUMBER

2815

DATE MAILED: 04/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/875,010

Applicant(s)

SHINOHARA, MAHITO

Examiner

Paul E Brock II

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 7-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species II, depicted in figure 3, in Paper No. 7 is acknowledged. While the applicant has indicated that claims 1 – 14 read on the elected species, a quick review of the figures clearly indicates that figure 3 does not disclose "photoelectric conversion portions two-dimensionally arrayed in the semiconductor region" and therefore only claims 1 – 6 read on species II. Claims 7 – 14 clearly read on the non-elected species as set forth above.

2. Claims 7 – 17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 – 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osawa (USPAT 4912560, Osawa) in view of Hyncek (USPAT 5502318).

With regard to claim 9, Osawa discloses in figure 9 a semiconductor region (112) of one conductivity type. Osawa discloses in figure 9 a charge transfer region (113) of a conductivity

Art Unit: 2815

type opposite to the conductivity type of the semiconductor region that is formed in the semiconductor region and joined to the semiconductor region to form a diode. Osawa discloses in figure 9 a signal charge input portion (161) adapted to input a signal charge to the charge transfer region. Osawa discloses in figure 9 a signal charge output portion (114) adapted to accumulate the signal charge transferred from the charge transfer region. Osawa does not teach a plurality of independent potential supply portions adapted to supply a potential gradient to the semiconductor region. Hynecek teaches in figure 1 a plurality of independent potential supply portions (ϕ_1 , ϕ_2 , and ϕ_3) adapted to supply a potential gradient to the semiconductor region. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the independent potential supply portions of Hynecek in the device of Osawa in order to obtain charge flow in the semiconductor device as stated by Hynecek in column 3, lines 9 – 15. It is further obvious in the device of Osawa and Hynecek wherein the signal charge transfer region is transferred by the potential gradient formed by the plurality of potential supply portions.

Claim 4 is applied to Osawa and Hynecek similar to claim 1 wherein the semiconductor substrate is one conductivity type and the semiconductor region of claim 1 is the same as the well of claim 4 of the second conductivity type.

With regard to claims 2 and 5, Osawa teaches in figure 9 wherein the charge transfer region is completely depleted before the signal charge is input. It should be noted that this limitation is a method of using limitation that bears no patentable weight on the claimed invention.

With regard to claims 3 and 6, Osawa teaches in figure 9 wherein the charge transfer region is buried in the semiconductor region (well) and forms a buried diode together with the semiconductor region.

Conclusion

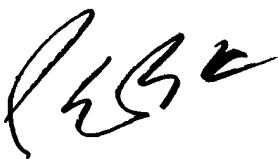
5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kadota and Matsunaga both disclose charge transfer regions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul E Brock II whose telephone number is (703)308-6236. The examiner can normally be reached on 8:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703)308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Paul E Brock II
April 12, 2002



EDDIE LEE
SUPERVISORY PATENT EXAMINER
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